SERVICE MANUAL

NAD

## SERVICE SAFETY PRECAUTIONS (UL)

1. Use exact replacement parts for critical locations marked "⚠"
2. Return lead dress to original position and re-install protective covers.
3. Before returning to customer, test for shock hazard; use either mothod A or B:

A. Leakage test "cold":
   1. Unplug the AC cord; turn power switch ON.
   2. Connect one lead of High Voltage Insulation Tester to both prongs of the AC plug.
   3. Touch other lead to all exposed metal parts.
   4. Impedance measurement must be 0.3-5.0 Megohms.

B. Leakage test, "live" :
   1. Plug unit directly into the AC outlet: do not use isolation transformer.
   2. Connect one lead of the Leakage Current Tester to earth ground.
   3. Touch other lead to all exposed metal parts.
   4. Leakage measurement must be less than 0.5 milliamps.

614 CASSETTE DECK

# 614

# CASSETTE DECK

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## Specifications

Description: Full logic and front loading stereo cassette deck with Dolby B/C NR.

| | | | | |
|---|---|---|---|---|
| Track system | 4-track, 2-channel stereo record/playback | | | |
| Power source | 120V/60Hz (for the AH version)<br>230V/50Hz (for the C version) | | | |
| Type of head | (Record) hard permalloy HAJCH4605A<br>(Erase) ferrite HAJAB3125A | | | |
| Tape speed | 4.75cm/sec. (1-7/8 inch/sec.) ±1% | | | |
| Wow & flutter | 0.05% (JIS WRMS); 0.05% (DIN) | | | |
| Input sensitivity/Impedance | 40mV±1dB/10K ohm | | | |
| Frequency response | Playback | | Rec/Play (NR:OFF) | |
| | 40Hz | ±3dB | 35Hz | +2dB, -3dB |
| | 125Hz | ±1.5dB | 40Hz | ±1.5dB |
| | 12.5kHz | ±1.5dB | 10kHz | ±1.5dB |
| | 14kHz | ±3dB | 12.5kHz | ±3dB |
| | | | 16kHz | ±5dB |
| Separation (with 1kHz band pass filter) | | | | |
| Dolby level input at 1kHz record/play | 40dB | | | |
| Distortion (at dolby level 1kHz) | | | | |
| Normal (I) | 1.0% | | | |
| CrO2 (II) | 2.2% | | | |
| Metal (IV) | 1.2% | | | |
| Signal to noise ratio<br>(Dolby NR:OFF CCIR/ARM weighted/<br>20Hz - 20kHz band pass filter) | | | | |
| Normal (I) no tape | 58dB/52dB | | | |
| CrO2 (II) no tape | 63dB/54dB | | | |
| Metal (IV) virgin tape | 58dB/53dB | | | |
| Power consumption | 23W | | | |
| Dimensions in mm (W x H x D) | 435 x 115 x 285 | | | |
| Net weight | 5kg (11 lbs) | | | |

# Top Cover Removal

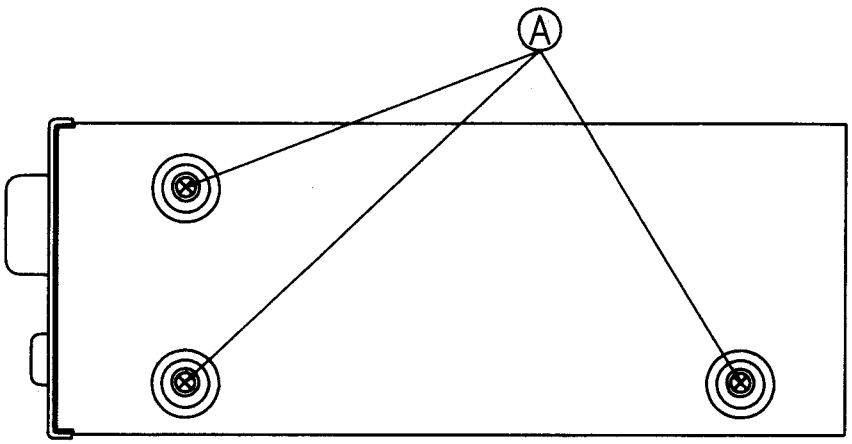



**Figure 1**

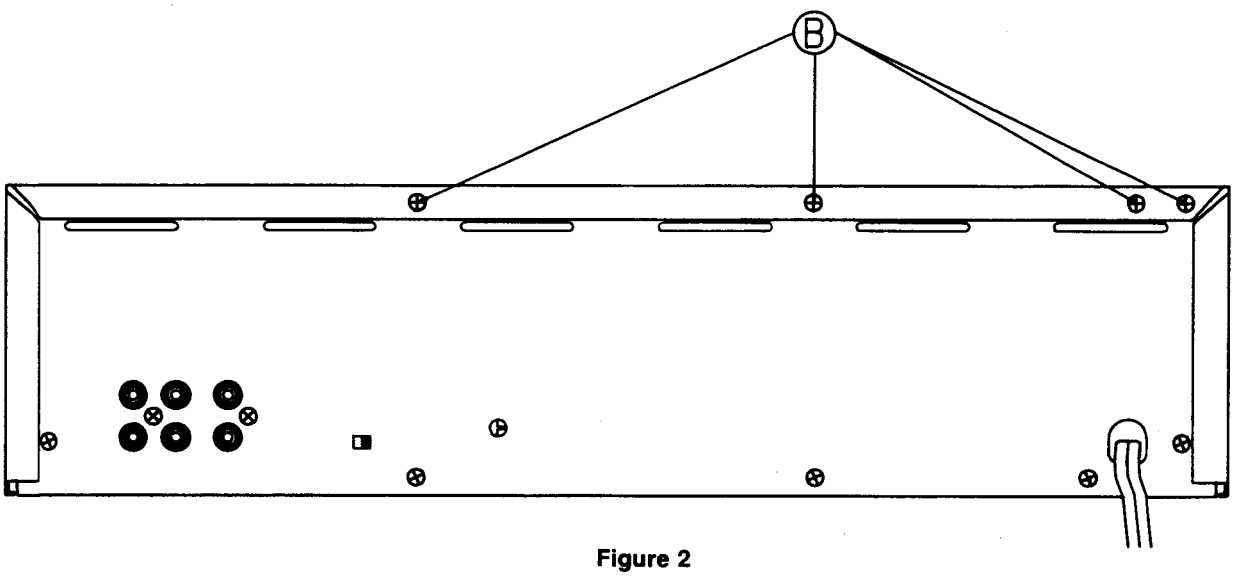



**Figure 2**

1. Remove 6 screws (A) from the left and right sides of the top cover. (See Figure 1)
2. Remove 4 screws (B) from the back panel. (See Figure 2)
3. Top cover can now be removed.

## Location of Controls

**WARNING:**TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

## REAR PANEL CONNECTIONS

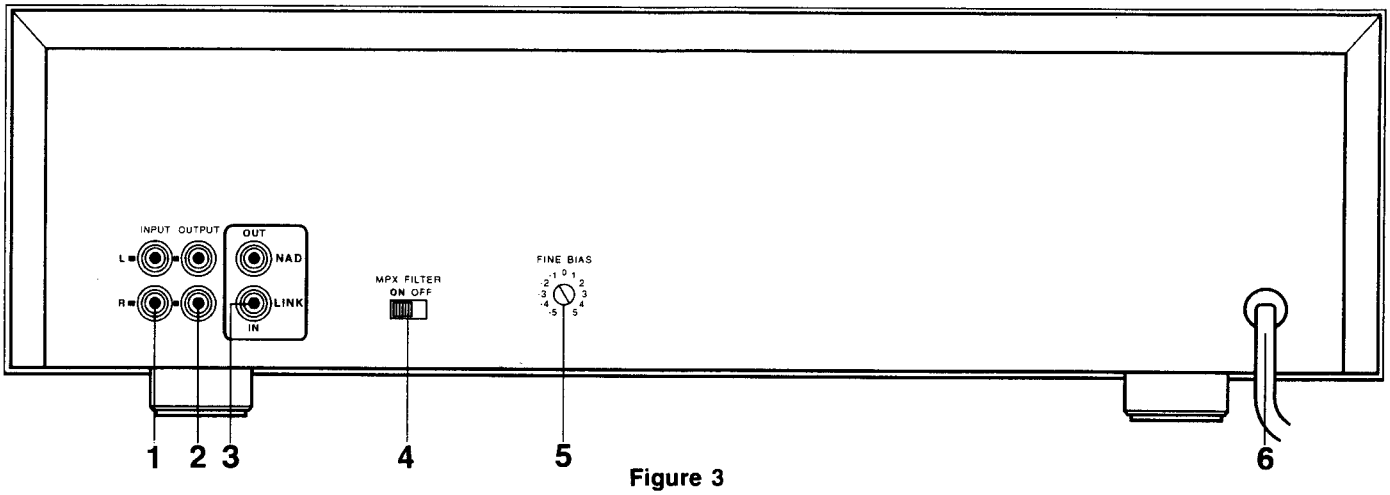



Figure 3

1. TAPE INPUT
2. TAPE OUTPUT
3. NAD LINK IN/OUT
4. MPX FILTER
5. FINE BIAS
6. AC POWER CORD

The lightning flash with arrowhead, within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance

## FRONT PANEL CONTROLS

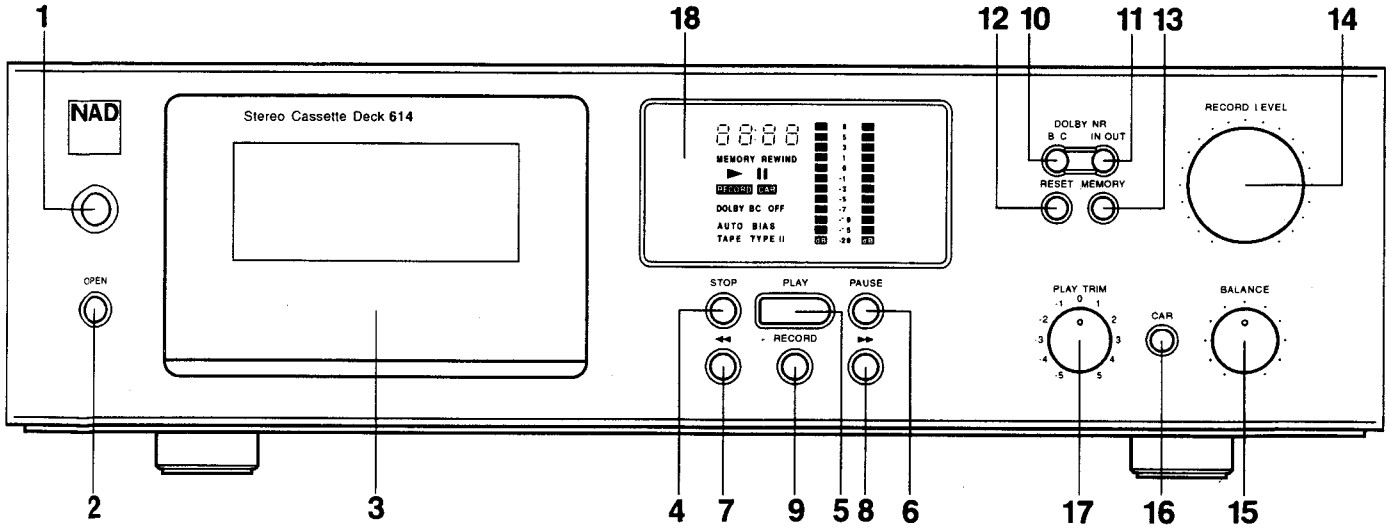



Figure 4

1. POWER BUTTON
2. OPEN BUTTON
3. CASSETTE COMPARTMENT
4. STOP BUTTON
5. PLAY BUTTON
6. PAUSE BUTTON
7. REWIND ◀◀ BUTTON
8. FAST FORWARD ▶▶ BUTTON
9. RECORD BUTTON
10. DOLBY NR B/C
11. DOLBY NR IN/OUT
12. RESET BUTTON
13. MEMORY BUTTON
14. RECORD LEVEL
15. BALANCE
16. CAR BUTTON
17. PLAY TRIM
18. DISPLAY

## Alignment Procedure

The tape path (heads, tape guides, capstan, pinch roller) should be cleaned and degaussed before alignment.

This tape recorder is designed to work well with a variety of tapes however, maximum performance will be obtained with recommended tapes or similar tape formulations.

| Recommended tapes | For North America | For Europe-DIN |
|---|---|---|
| Type I | Maxell UDS-I, Maxell UD-I | BASF TP18, R723DG |
| Type II | Maxell SL-II, Teac MTT-5561 | |
| Type IV | Maxell MX, TDK AC712 | |

Before adjusting, switch DOLBY NR off, and set PLAY TRIM to center position.

DOLBY NR level 200nWb/m = 245mV RMS on testpoints TP003 (PLAYBACK and RECORDING) on Main PCB; approximately 530mV at line outputs.

**1.TAPE SPEED**
Connect one output to Wow and Flutter Meter of Frequency Counter, Play speed test tape TEAC MTT-111=3kHz or TEAC MTT-211=3.15kHz and adjust the semi-variable resistor, for correct reading on Wow and Flutter Meter or Frequency Counter. Tolerance:+/-1%

**2. AZIMUTH**
Connect VTVM's and/or Oscilloscope to outputs. Start playing Azimuth tape TEAC MTT-113 or MTT-114. Rotate azimuth screw for maximum output and/or maximum and in-phase on Oscilloscope. Reseal adjustment screw with nail polish or similar (do not use glue).

**3. PLAYBACK EQUALIZER**
THIS ADJUSTMENT IS NOT NEEDED UNLESS THE HEAD HAS BEEN REPLACED OF REPAIR HAS BEEN DONE IN HEADAMP CIRCUIT.

Play level/azimuth tape TEAC MTT-256 and adjust SVR001 (L) and SVR002 (R) for identical output at 315/6300 Hz (MTT-255) OR 250/6300 Hz (MTT-256). Tolerance:+/-0.5dB.

**4. PLAYBACK HIGH FREQUENCY EQUALIZER**
THIS ADJUSTMENT SHOULD BE DONE ONLY WHEN HEAD HAS BEEN REPLACED.

Before adjusting cut out links EJ001 to EJ008. Play the frequency response tape TEAC MTT5561 and check the 14kHz level. Adjust to the 400Hz level adjusting SVR007 (L) and SVR008 (R), if the level is low, link EJ005/EJ008 and/or EJ007/EJ008. Repeat till 400Hz and 14kHz levels are the same. Tolerance: +1.5dB/-0.5dB

**5. PLAYBACK LEVEL**
Connect VTVM's to testpoints TP003 on Main PCB. Play Dolby NR level tape TEAC MTT-150 and adjust SVR003 (L) and SVR004 (R) for 245mV RMS. Tolerance:+/-2.5mV RMS.

output should be approximately 530mV RMS.

**6. BIAS TRAP**
Insert a blank type IV and start recording. Turn record level all the way down. Connect VTVM's and/or oscilloscope probes to testpoints TP201 and adjust F201 (L) and F202 (R) for minimum. Tolerance: Less than 300mV RMS.

**7. BIAS CURRENT ADJUSTMENT**
Connect VTVM to TP001 (L), set unit with tape in rec/pause and adjust L301 (L) to 8.5mV. Same for TP002 (R) and adjust L302 (R).

**8. RECORD LEVEL**
Connect VTVM's to testpoints TP003 on Main PCB. Insert a type I tape. Connect audio oscillator to line inputs, turn record levels to maximum (clockwise). Adjust audio oscillator frequency to 400Hz and output so the VTVM's read 30-40mV.
(Use a convenient reference point on the VTVM's).

Reset tape counter to 0 and release pause to start recording.
Record for approximately 5 seconds, rewind to 0 on tape counter and play back while observing the VTVM's. The VTVM's should indicate the same level as when the tape was recorded. Adjust SVR201 (L) and SVR202 (R) if necessary and repeat the record/play procedure until the readings are the same.
Tolerance: +/-0.5dB from record level. Less than 0.5dB difference between channels.

**9. BIAS ADJUST TYPE I TAPE (NORMAL)**
Leave the connections of the VTVM's as under 7.
Set audio generator to 400Hz, Set level to -20dB. Reset tape counter to 0 and start recording. After 5 seconds change audio generator frequency to 8.3kHz (do not stop the machine or change levels) and continue recording for another 5 seconds stop and rewind to 0 on tape counter. Play back while observing VTVM's There should be no level difference between the 400Hz and the 6.3kHz tone when played back. If 6.3kHz is different in level to 400Hz, adjust SVR305 (L) and SVR306 (R) and repeat the record/play procedure until both frequencies play back at same level. Tolerance: +/-0.5dB
Use 10kHz if unable to set REC/PB to give a flat response
**WARNING:** Greater tolerance will grossly affect the Dolby NR tracking and especially the Dolby C tracking.

Record level (step 7) should be checked and if necessary adjusted.

**10. PEAKING CIRCUIT TYPE I TAPE (NORMAL)**
Leave the connections of the VTVM's as under 7.
Adjust audio generator to 14kHz while maintaining the same output level.
Record and play back the 14kHz tone and adjust SVR207 (L) and SVR208 (R) to the same level as the 400Hz.
Use 16kHz if unable to set REC/PB to give a flat response. Tloerance: +/-1.0dB.

**WARNING:** If the R/P head is worn, the tape may not have adequate contact with the head resulting in severe drop outs.
A worn head will make this adjustment very difficult or impossible. Do not try to adjust the worn R/P head. Leave SVR207 (L) and SVR208 (R) in the factory preset condition, or if they have already been adjusted, re-adjust them to their approximate midposition.

**11. FREQUENCY RESPONSE TYPE II TAPE (CrO2)**
Insert a type II tape. Adjust audio generator to 400Hz and 6.3kHz and repeat procedure described in step 8 using SVR304 (R) and SVR303 (L) to adjust both channels simultaneously. After 400Hz and 6.3kHz are adjusted properly, set audio generator to 14kHz and repeat same procedure as described in step 9 while adjusting SVR205 (L) and SVR206 (R) to obtain correct reading.

**12. FREQUENCY RESPONSE TYPE IV TAPE (METAL)**
Insert a type IV tape. Repeat procedure as in step 8 while adjusting SVR302 (R) and SVR301 (L) for correct 6.3kHz level in both channels. Set audio generator to 14kHz and repeat procedure as in step 8 while adjusting SVR203 (L) and SVR204 (R) for correct 14kHz record level.

**13. 19kHz MPX ADJUSTMENT**
Connect VTVM to TP003, feed with the audio generator 19kHz, 1V to line input and set unit in rec/play mode. Switch the MPX switch on and adjust F101 (L) and F102 (R) for minimal reading on VTVM. The difference in MPX on and off should be over 30dB.

**14. CAR CIRCUIT**
Set unit in REC/PAUSE mode, and connect VTVM to TP003. Adjust input signal to give 24mV. Switch car on and adjust SVR101/102 to increase level by 5dB.

## Adjustment Locations

MAIN PCB

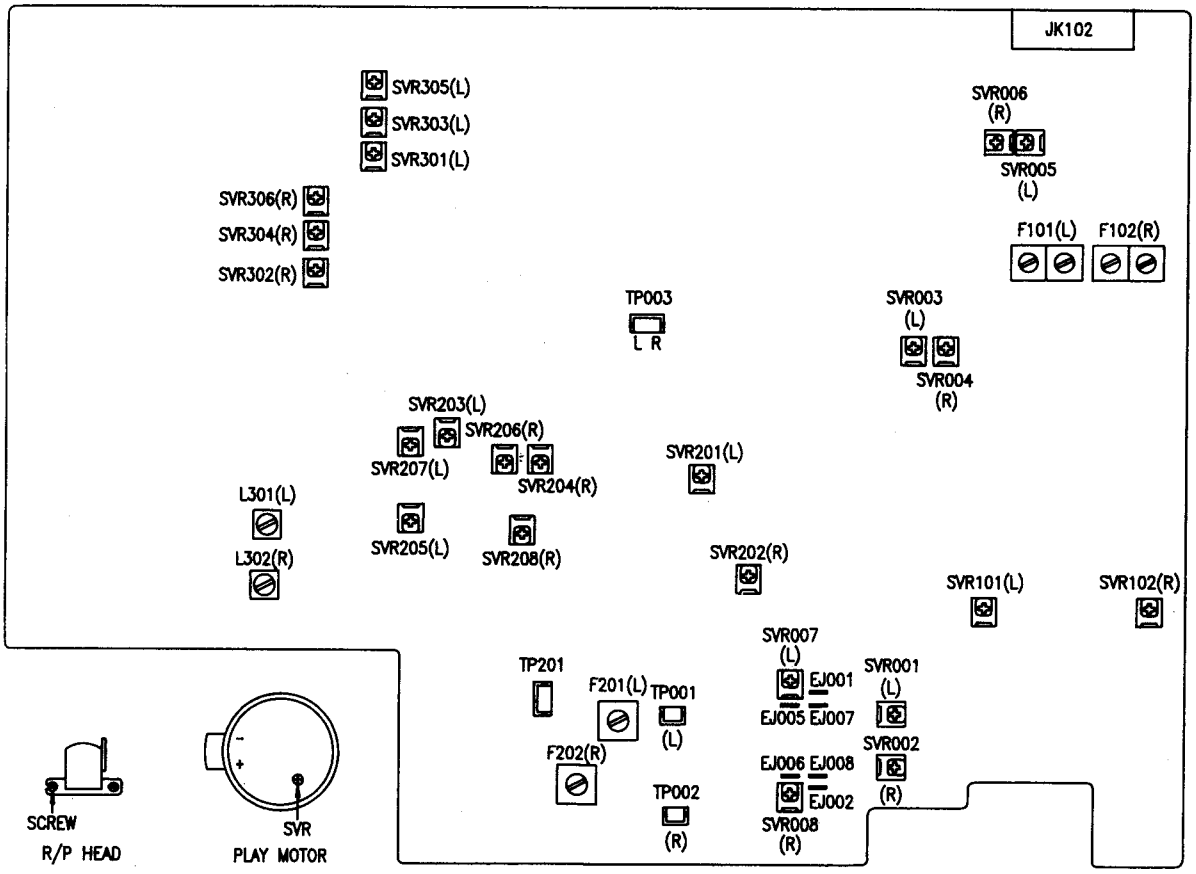






Figure 7




Figure 6

Figure 5

# IC/Transistor Voltage Chart

## 1. IC

| IC NO. | PIN NO. | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| IC001 | 0 | 0 | 0 | -11.9 | 0 | 0 | 0 | 11.9 | | | | | | | | | | | | |
| IC002 | 7.3 | 0 | -6.04 | 0 | 6.15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -6.8 | -6.95 | 0 | -6.8 | 7 | 0 | 0 | 0 |
| IC003 | 0 | 0 | 0 | -11.9 | 0 | 0 | 0 | 11.9 | | | | | | | | | | | | |
| IC101 | 0 | 0 | 0 | -11.9 | 0 | 0 | 0 | 11.9 | | | | | | | | | | | | |
| IC102 | 0 | 0 | 0 | -11.9 | 0 | 0 | 0 | 11.9 | | | | | | | | | | | | |
| IC201 | 0 | 0 | 0 | -11.9 | 0 | 0 | 0 | 11.9 | | | | | | | | | | | | |
| IC202 | 0 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NC | 11.9 | | | | |
| IC301 | 4.46 | 2.57 | 4.44 | 2.5 | 2.1 | 15.1 | 17.2 | 17.2 | 0 | 1.8 | 17.2 | 17.2 | 15.2 | 2.1 | 2.5 | 4.5 | 2.6 | 17.4 | | |
| IC302 | 11.9 | NC | 11.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NC | 11.9 | | | | |
| IC303 | 0 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NC | 11.9 | | | | |
| IC401 | 3.53 | 1.9 | 4.3 | 4 | 0 | 4.23 | 0 | 3.54 | 0 | 0 | 0 | 4.2 | 4.3 | 1.8 | 0 | 4.5 | 3.5 | 0 | 4.2 | 4.2 |
| IC403 | 0 | 5.6 | 7.1 | 5.7 | 3.9 | 0 | 12 | 11.2 | 0.72 | 0 | | | | | | | | | | |
| IC404 | 0 | 0 | 0 | 0 | 4.23 | 4.23 | 0 | 4.24 | | | | | | | | | | | | |
| IC601 | 27 | 0 | 12 | | | | | | | | | | | | | | | | | |
| IC602 | -27 | 0 | -12 | | | | | | | | | | | | | | | | | |
| IC603 | 20 | 0 | 5 | | | | | | | | | | | | | | | | | |
| IC604 | 20 | 0 | 12 | | | | | | | | | | | | | | | | | |

| IC NO. | PIN NO. | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| IC002 | 0 | 0 | 0 | 0 | 0 | -7 | -6.8 | 0 | -7 | -6.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -7.3 | 0 | 0 |
| IC401 | 4.2 | 0 | 0 | 3.6 | 0 | 4.2 | 4.2 | 4.2 | 4.2 | 0 | 0 | 0 | 0 | 0 | -25.6 | -25.6 | -25.6 | -25.6 | -25.6 | -25.6 |

| IC NO. | PIN NO. | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| IC002 | 0 | -7.3 | | | | | | | | | | | | | | | | | | |
| IC401 | -25 | -22.7 | -23 | -23 | -23 | -23 | -23 | -23 | -23 | -10 | -14 | -16 | -16 | -14 | -14 | -17 | -22 | -22 | -25 | -25 |

| IC NO. | PIN NO. | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| IC401 | -22 | -25 | -25 | -25 | -25 | -25.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.12 | 0.12 | 0.37 | 0.37 | 0.37 | 0.37 |

RECORD SIGNAL

| IC NO. | PIN NO. | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | |
| IC302 | 11.9 | NC | 11.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.9 | 4.4 | 4.4 | 4.4 | NC | 11.9 | | | | |
| IC303 | 0.95 | NC | 0.95 | 2.6 | 1.4 | 0 | 0 | 0 | 0 | 0 | 2.4 | 0.98 | 0.98 | 1.4 | NC | 11.9 | | | | |

## 2. TRANSISTORS

| TR NO. | Q001-006 | Q003 | Q007 | Q008 | Q010 | Q011 | Q012 | Q013 | Q014 | Q015 | Q101 | Q102 | Q103 | Q104 | Q105 | Q106 | Q109 | Q110 | Q113 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | 0 | 0 | 0 | 0 | -7.3 | 7.3 | 11.4 | 0 | 0 | 0 | -0.65 | -0.65 | 0.6 | 0.6 | 0 | 0 | 0 | 0 | 0 |
| C | 0 | 0 | 12 | 6.2 | -7.3 | -7.3 | 0 | 11 | 0 | 0 | 11.9 | 11.9 | -11.9 | -11.9 | 0 | 0 | 11.9 | 11.9 | 0 |
| B | 0 | 0 | 0 | 0 | -7.3 | 7.3 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0.6 | 0 |

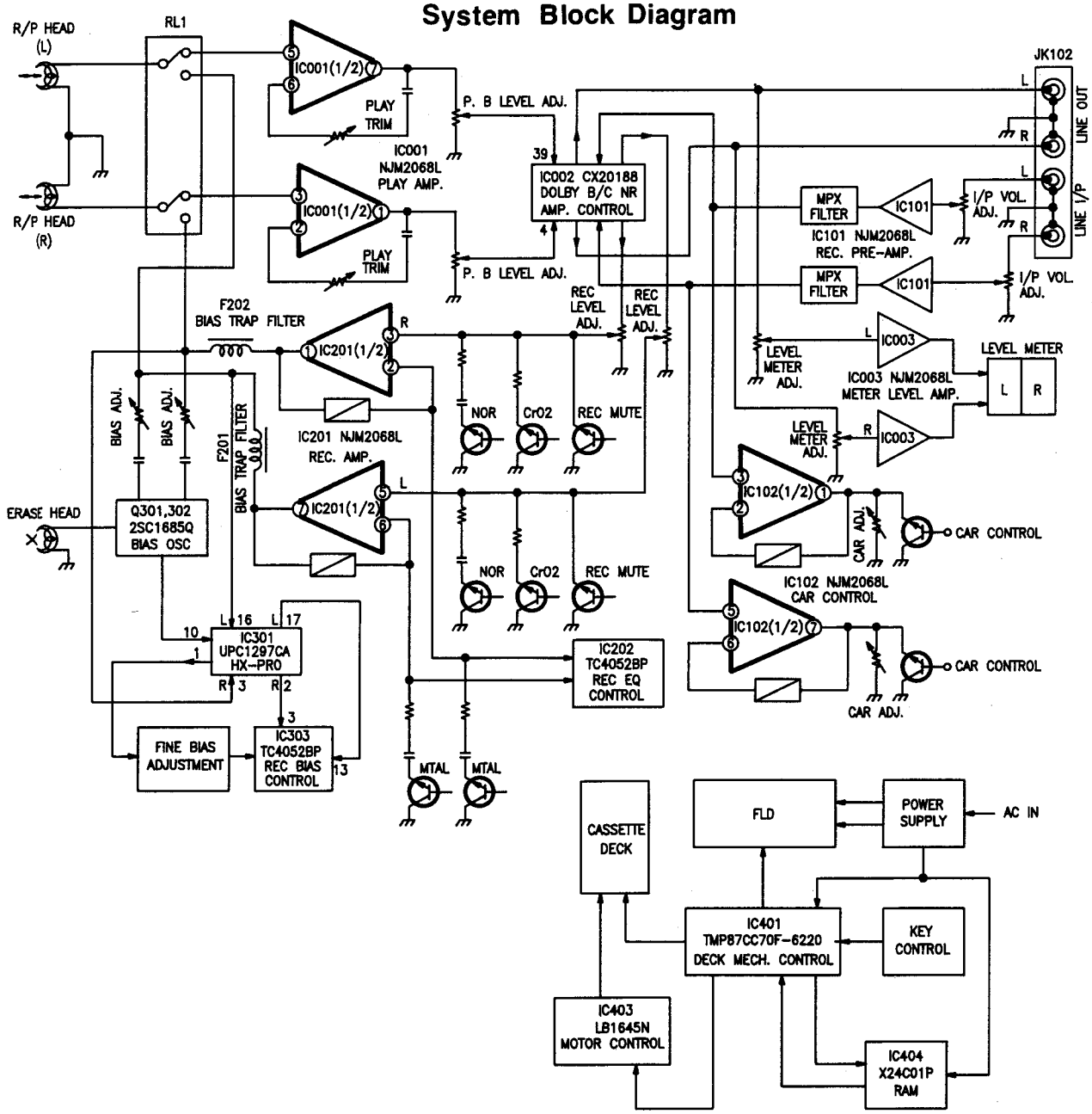
| TR NO. | Q114-116 | Q201 | Q202 | Q203 | Q204 | Q205-208 | Q209 | Q210 | Q211 | Q212 | Q214 | Q215 | Q216 | Q217 | Q301 | Q302 | Q303 | Q304 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | -8 | 0 | 11.9 | 0 | 0 | 27.5 | 0 |
| C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0.63 | 10.3 | -10.5 | 0 | 11.9 | 0 | 0 | 0.4 | 0 |
| B | 0 | 0 | 0 | 0.6 | 0.6 | 0 | 0.6 | 0 | 0.63 | 0 | 7.3 | -7.3 | 3.6 | 0 | 0.4 | 0.4 | 0 | 0.7 |

| TR NO. | Q305 | Q401 | Q402 | Q403 | Q404 | Q405 | Q406 | Q407 | Q408 | Q410 | Q411 | Q413 | Q415 | Q416 | Q417 | Q418 | Q419 | TR NO. | Q107 | Q108 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | 0 | 4.2 | 0 | 4.2 | 0 | 4.2 | 0 | 3.6 | 4.1 | 0 | 0 | 0 | 0 | 12 | 0 | 12 | 12 | D | 1.3 | 1.3 |
| C | 0.7 | 1.9 | 0 | 4.2 | 27.3 | 0 | 4.5 | 4.4 | 0.2 | 12 | 0 | 0 | 12 | 0 | 12 | 0 | 0 | S | 1.3 | 1.3 |
| B | 0 | 2.5 | 0.7 | 3.5 | 0 | 4.2 | 0 | 4.2 | 3.6 | 0 | 4.2 | 4.2 | 4.2 | 12 | 0 | 12 | 12 | G | 0 | 0 |

RECORD SIGNAL

| TR NO. | Q003 | Q004 | Q007 | Q008 | Q207 | Q208 | Q216 | Q217 | Q301 | Q302 | Q303 | Q304 | Q305 | Q417 | Q418 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11.9 | 0 | 0 | 25 | 0 | 0 | 0 | 12 | | | | | |
| C | 0 | 0 | 0 | 0 | 0 | 0 | 11.9 | −8.3 | 2.1 | 2.1 | 17.3 | 17.8 | 0 | 0 | 12 | | | | | |
| B | 0.7 | 0.7 | 0.7 | 11.5 | 0.6 | 0.6 | 0 | 11.9 | 1.7 | 1.7 | 17.9 | 0 | 0.6 | 4.3 | 0 | | | | | |

## System Block Diagram



# Mechanical Parts List

| Ref. No. | Part No. | Description |
|---|---|---|
| M1 | 100807D614 | Cassette door |
| M2 | 100707D614 | Door Window |
| M3 | 201407D614 | Mirror |
| M4 | 201307D614 | Deck shield plate |
| M5 | 8642260400 | 6 (Taptite-S) BID2604 ZN3K (2 pieces) screws |
| M6 | 100507D614 | Front panel |
| M7 | 8641300800 | 6 (Taptite-S) BID3008 ZN3A (4 pieces) screws |
| M8 | 100607D614 | Display window |
| M9 | 101707D614 | W. pointer (3 pieces) |
| M10 | 101307D614 | Volume knob |
| M11 | 101407D614 | B. T. knob (2 pieces) |
| M12 | 101507D614 | Power knob |
| M13 | 8741300800 | 7 (Taptite-P) BID3008 ZN3A (10 pieces) screws |
| M14 | 200407D614 | T. bracket (2 pieces) |
| M15 | 100907D614 | R/F knob (5 pieces) |
| M16 | 200807D614 | Guide bracket |
| M17 | 200207D614 | Eject plate |
| M18 | 200607D614 | C. spring |
| M19 | 200707D614 | M. eject plate |
| M20 | 200307D614 | Deck holder |
| M21 | 8641300400 | 6 (Taptite-S) BID3004 ZN3A (4 pieces) screws |
| M22 | C145241640 | Record volume PCB assembly |
| M23 | C145241630 | Play trim PCB assembly |
| M24 | 200507D614 | Shield plate |
| M25 | 201207D614 | LCD cushion (10Lx10Wx6T EVA60) (2 pieces) |
| M26 | C145241650 | Record balance PCB assembly |
| M27 | 200107D614 | FL holder (2 pieces) |
| M28 | 4380404980 | Cassette deck C-90F09D |
| M29 | 101007D614 | Play knob |
| M30 | 101107D614 | Record knob |
| M31 | 101207D614 | Dolby knob (5 pieces) |
| M32 | C141241500 | Front PCB assembly |
| M33 | 8711200500 | 7 (Taptite-P) PAN2005 ZN3A (2 pieces) screws |
| M34 | 8641300600 | 6 (Taptite-S) BID3006 ZN3A (8 pieces) screws |
| M35 | 100307D614 | Base |
| M36 | 101607D614 | Foot (4 pieces) |
| M37 | 200907D614 | Spacer supporter (SCD-12S) (4 pieces) |
| M38 | C145241610 | Main PCB assembly |
| M39 | 8661300600 | 6 (Taptite-S) CUP3006 ZN3A (6 pieces) screws |
| M40 | 202304301A | Heat sink H30 (4 pieces) |
| M41 | 8941300800 | 9 (Taptite-B) BID3008 ZN3A (4 pieces) screws |
| M42 | 8662400800 | 6 (Taptite-S) CUP4008 ZN3K (6 pieces) screws |
| M43 | 100107D614 | Top cover |
| M44 | 100407D614 | Bottom base |
| M45 | 8642401000 | 6 (Taptite-S) BID4010 ZN3K (4 pieces) screws |
| M46 | 2003038401 | Transformer washer (2 pieces) |
| M47*AH | C145241620 | Transformer PCB assembly |
| M47*C | C145241621 | Transformer PCB assembly |
| M48*AH | 101807D614 | Back panel |
| M48*C | 100207D614 | Back panel |
| M49 | 8642300800 | 6 (Taptite-S) BID3008 ZN3K (9 pieces) screws |
| M50 | 8742301000 | 7 (Taptite-P) BID3010 ZN3K (2 pieces) screws |
| M51 | 201507D614 | Filter |
| M52 | 201607D614 | Cushion (2 pieces) |
| M53 | 2000000026 | Earth terminal |
| M54 | 202007D614 | Rubber washer |
| M55 | 201807D614 | Cushion |
| M56 | 201707D614 | Trans. spacer |
| M57 | 3021220015 | W. FLT-A-0015-MS-ZN3K (4 pieces) |
| M58 | 3022220004 | W. spring-A-0004-MS-ZN3K (4 pieces) |
| M59 | 8761300800 | 7 (Taptite-P) CUP3008 ZN3A screw |

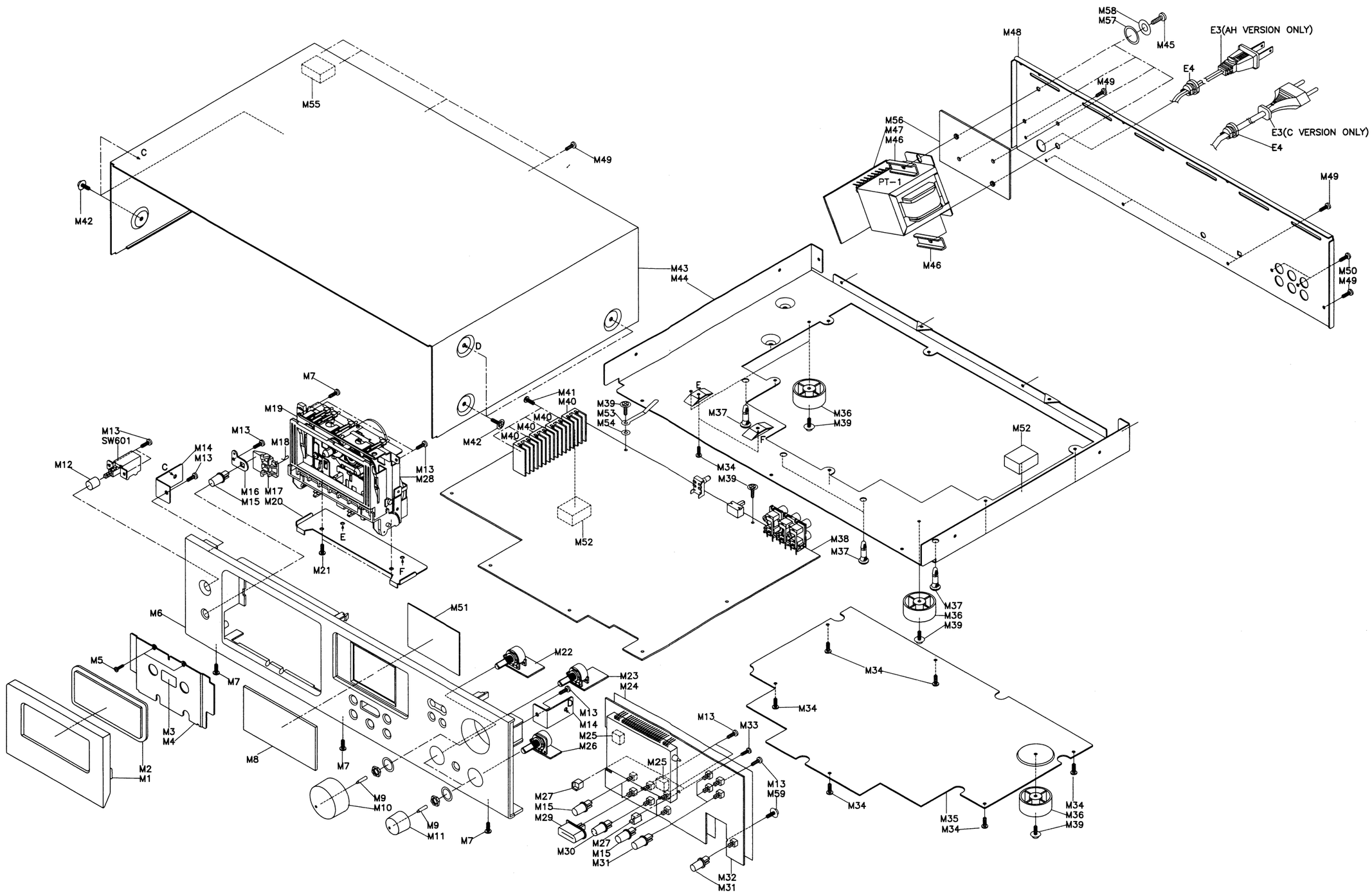
MISCELLANEOUS

| | | |
|---|---|---|
| SW601 | 4430102450 | Power switch |
| PT-1 | 420C542229 | Power transformer EI-54 UL/CSA |
| E3*AH | 463137P070 | AC cord UL/CSA 7FT BLK SPT-2 |
| E3*C | 463221P070 | AC cord VDE 7FT BLK2 |
| E4 | 4580200002 | Cord stopper 4N-4 |

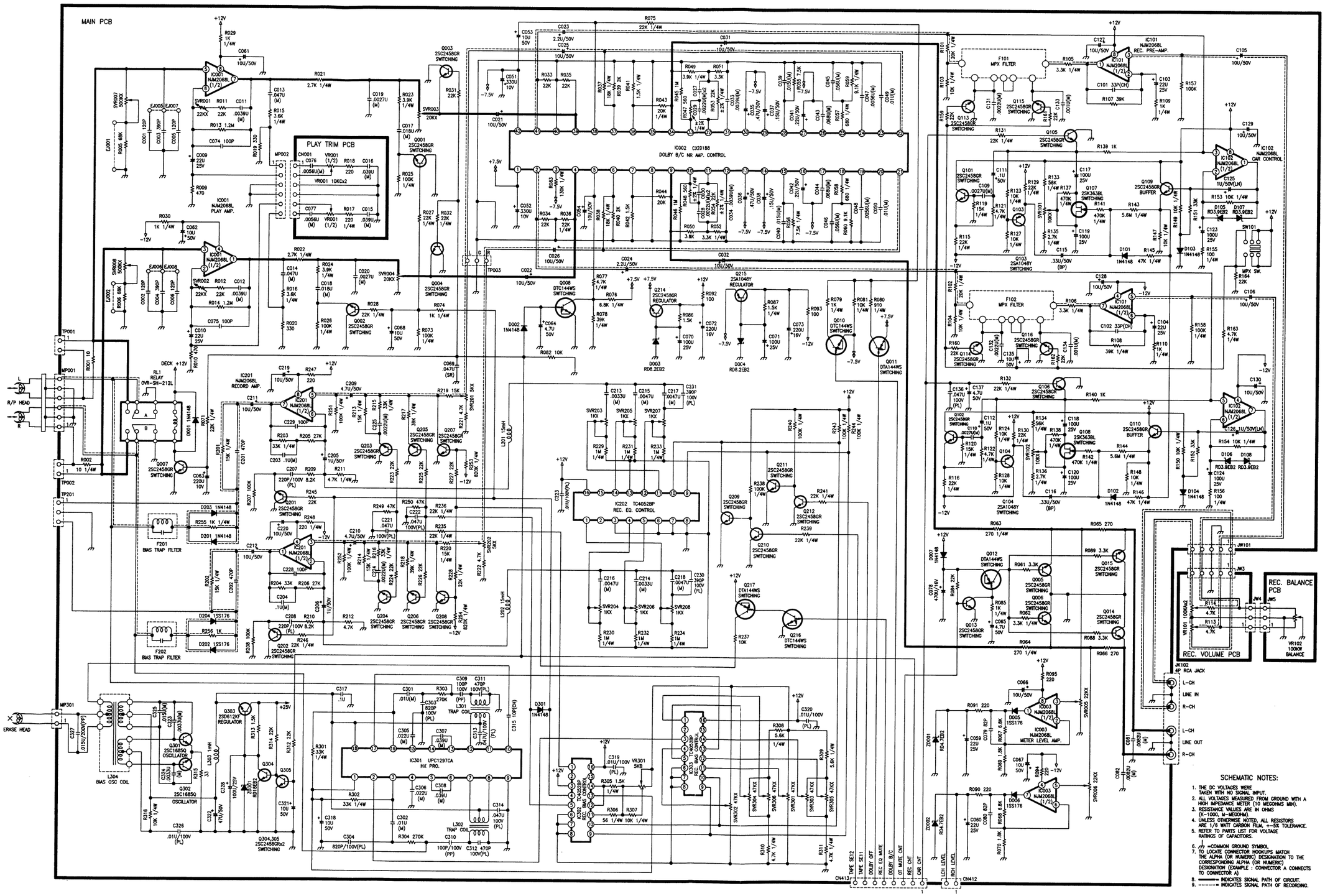
P C BOARD ASSEMBLY KIT'S

| | | |
|---|---|---|
| K1*AH | K12326D614 | Main PCB assembly kit's |
| K1*C | K12336D614 | Main PCB assembly kit's |
| (M22) | C145241640 | Record volume PCB assembly |
| (M23) | C145241630 | Play trim PCB assembly |
| (M26) | C145241650 | Record balance PCB assembly |
| (M38) | C145241610 | Main PCB assembly |
| (M47)*AH | C145241620 | Transformer PCB assembly |
| (M47)*C | C145241621 | Transformer PCB assembly |

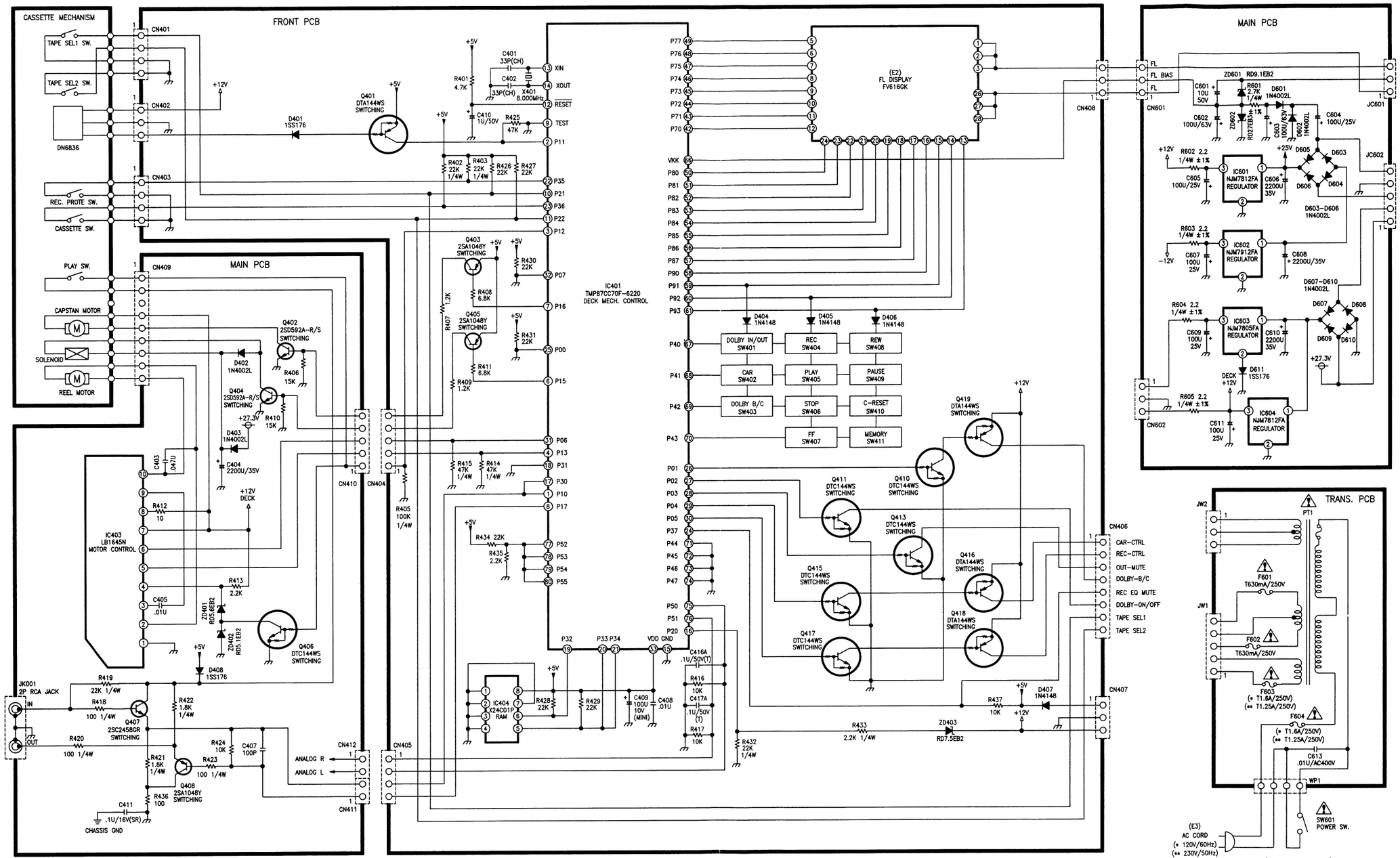
# Mechanical Exploded View



# Schematic Diagram–Main


MAIN PCB
PLAY TRIM PCB
IC001 NJM2068L (1/2) PLAY AMP.
IC002 CX20188 DOLBY B/C NR AMP. CONTROL
IC101 NJM2068L REC. PRE-AMP.
IC102 NJM2068L CAR CONTROL
IC201 NJM2068L RECORD AMP.
IC202 TC4052BP REC. EQ. CONTROL
IC301 UPC1297CA Hx PRO.
IC302 TC4052BP Hx PRO. CONTROL
IC003 NJM2068L METER LEVEL AMP.
F101 MPX FILTER
F102 MPX FILTER
F201 BIAS TRAP FILTER
F202 BIAS TRAP FILTER
REC. BALANCE PCB
REC. VOLUME PCB
SCHEMATIC NOTES:
1. THE DC VOLTAGES WERE TAKEN WITH NO SIGNAL INPUT.
2. ALL VOLTAGES MEASURED FROM GROUND WITH A HIGH IMPEDANCE METER (10 MEGOHMS MIN).
3. RESISTANCE VALUES ARE IN OHMS (K=1000, M=MEGOHM).
4. UNLESS OTHERWISE NOTED, ALL RESISTORS ARE 1/6 WATT CARBON FILM, +-5% TOLERANCE.
5. REFER TO PARTS LIST FOR VOLTAGE RATINGS OF CAPACITORS.
6. ⏚ =COMMON GROUND SYMBOL
7. TO LOCATE CONNECTOR HOOKUPS MATCH THE ALPHA (OR NUMERIC) DESIGNATION TO THE CORRESPONDING ALPHA (OR NUMERIC) DESIGNATION (EXAMPLE : CONNECTOR A CONNECTS TO CONNECTOR A)
8. ——— INDICATES SIGNAL PATH OF CIRCUIT.
9. - - - - - INDICATES SIGNAL PATH OF RECORDING.

# Schematic Diagram- Front

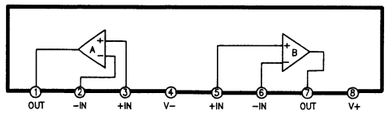



SCHEMATIC NOTES:

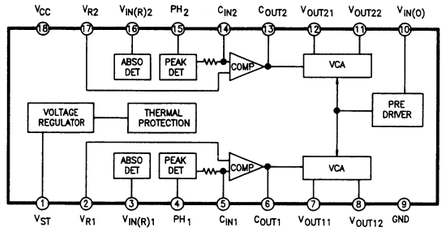
1. THE DC VOLTAGES WERE TAKEN WITH NO SIGNAL INPUT.
2. ALL VOLTAGES MEASURED FROM GROUND WITH A HIGH IMPEDANCE METER (10 MEGOHMS MIN).
3. RESISTANCE VALUES ARE IN OHMS (K-1000, M-MEGOHM).
4. UNLESS OTHERWISE NOTED, ALL RESISTORS ARE 1/6 WATT CARBON FILM, +-5% TOLERANCE.
5. REFER TO PARTS LIST FOR VOLTAGE RATINGS OF CAPACITORS.
6. ⏚ =COMMON GROUND SYMBOL.
7. TO LOCATE CONNECTOR HOOKUPS MATCH THE ALPHA (OR NUMERIC) DESIGNATION TO THE CORRESPONDING ALPHA (OR NUMERIC) DESIGNATION (EXAMPLE : CONNECTOR A CONNECTS TO CONNECTOR A)
8. PARTS MARKED WITH THE SYMBOL ⚠ HAVE CRITICAL CHARACTERISTICS. USE ONLY REPLACEMENT PARTS RECOMMENDED BY THE MANUFACTURER.
9. (T) = MULTI-LAYER CERAMIC CAPACITOR.

# IC Block Diagram

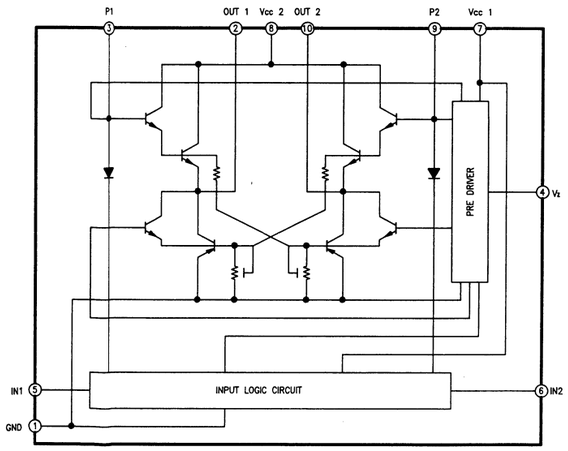
IC001 NJM2068L (PLAY AMP.)
IC003 NJM2068L (METER LEVEL AMP.)
IC101 NJM2068L (RECORD PRE-AMP.)
IC102 NJM2068L (CAR CONTROL)
IC201 NJM2068L (RECORD AMP.)



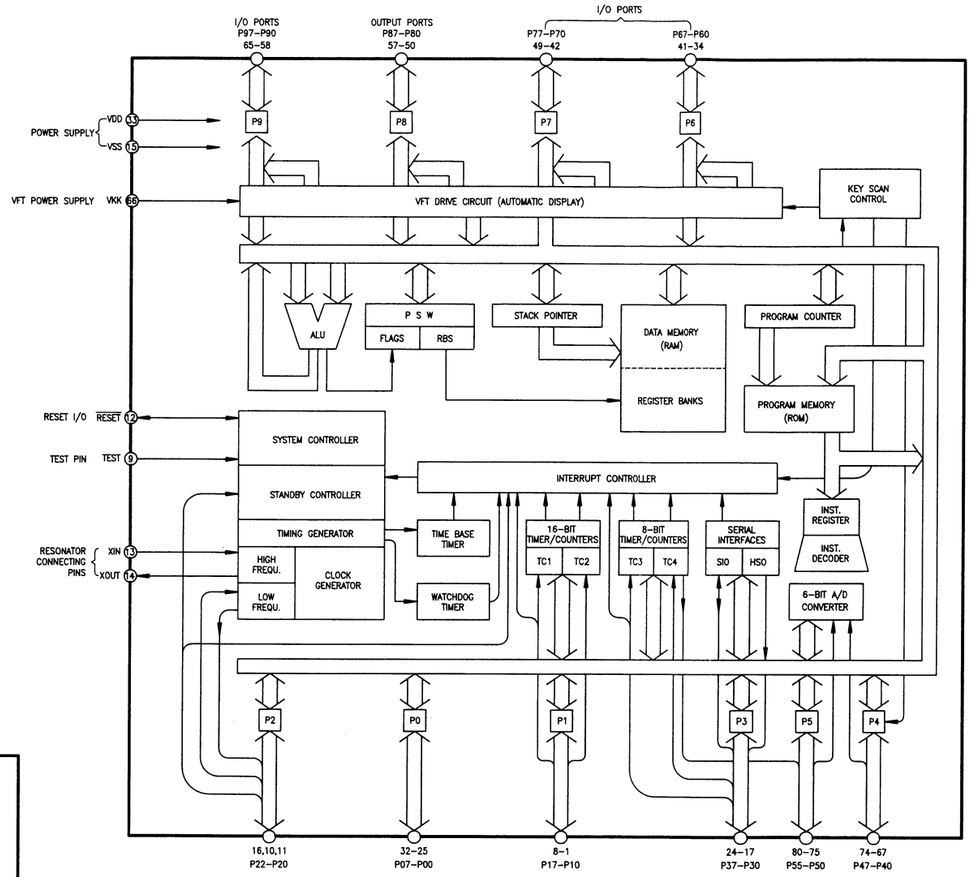

IC301 UPC1297CA (HX PRO.)



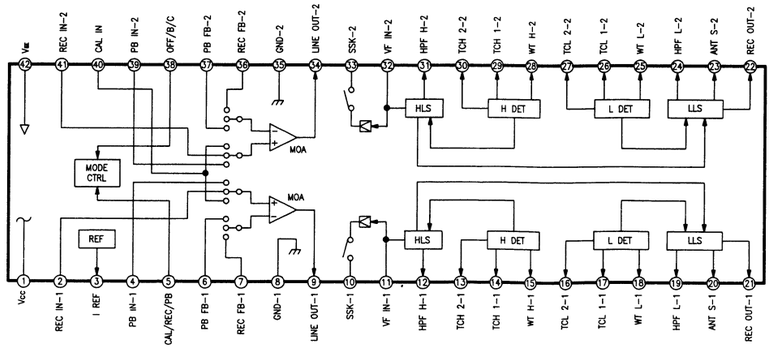

IC403 LB1645N (MOTOR CONTROL)



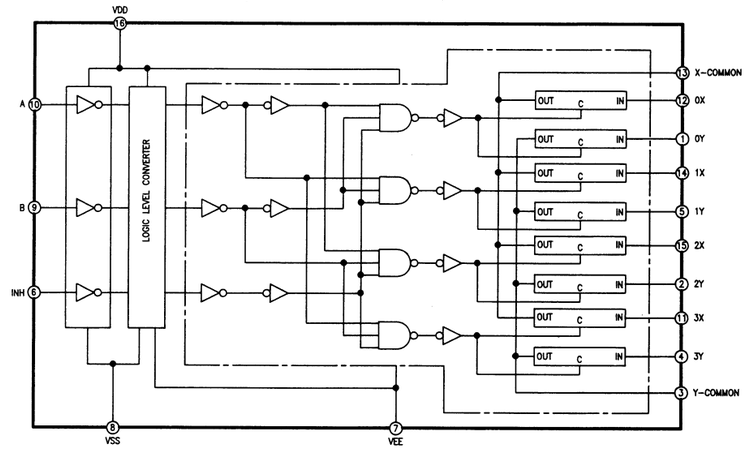

IC401 TMP87CC70F-6220 (DECK MECH. CONTROL)



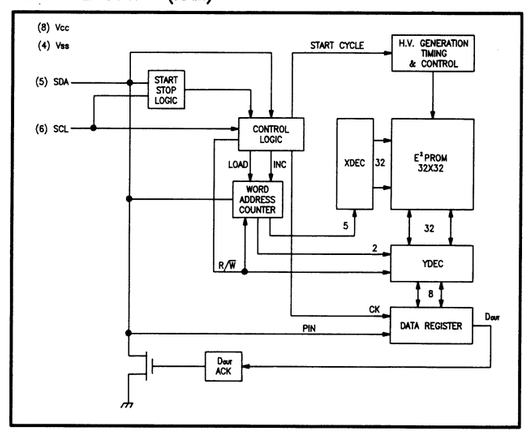

IC002 CX20188 (DOLBY B/C NR AMP. CONTROL)



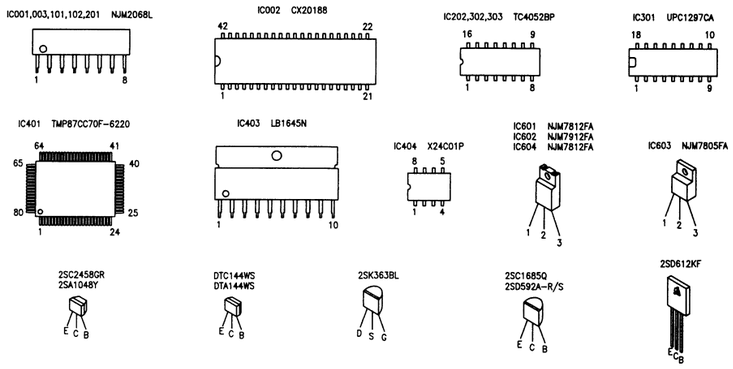

IC202 TC4052BP (RECORD EQUALIZER CONTROL)
IC302,303 TC4052BP (RECORD BIAS CONTROL)




IC404 X24C01P (RAM)




IC/TRANSISTOR CONNECTIONS:



# P C Boards - Component Side

(M38) MAIN PCB

(M32) FRONT PCB

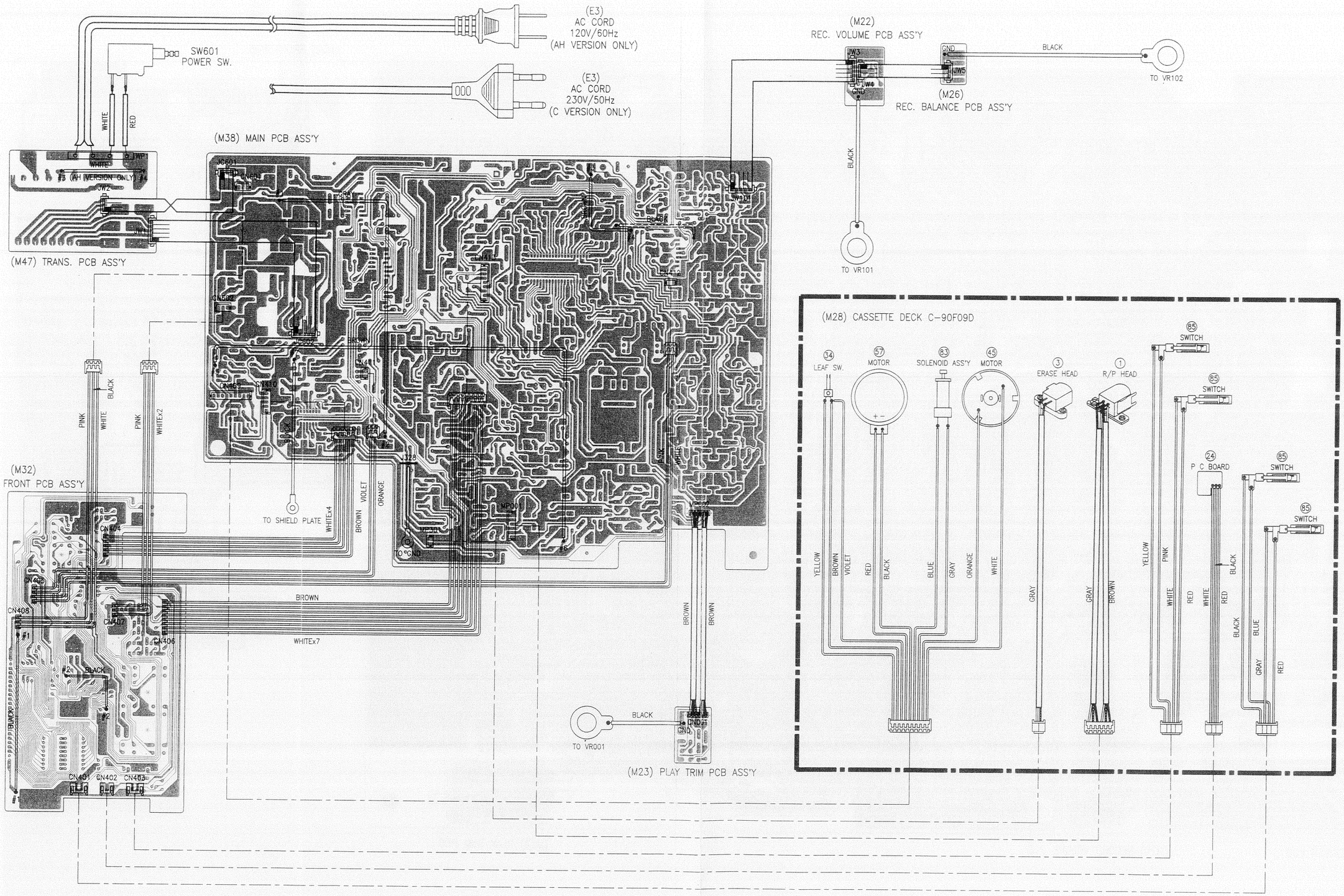
(M47) TRANSFORMER PCB

(M22) RECORD VOLUME PCB

(M26) RECORD BALANCE PCB

(M23) PLAY TRIM PCB

# Wiring Diagram-Component Side



# Replacement Parts List

**Main PCB Assembly**

| Symbol No. | Ref. No. | Part No. | Description |
|---|---|---|---|
| P C Board | | | |
| | 4145241610 | 4145241610 | PCB no components |
| | C145241610 | C145241610 | PCB assembly |
| ICS & TRANSISTORS | | | |
| IC001 | NJM2068L | 415902068L | Play amplifier |
| IC002 | CX20188 | 415C201880 | Dolby B/C NR amplifier control |
| IC003 | NJM2068L | 415902068L | Meter level amplifier |
| IC101 | NJM2068L | 415902068L | Record pre-amplifier |
| IC102 | NJM2068L | 415902068L | Car control |
| IC201 | NJM2068L | 415902068L | Record amplifier |
| IC202 | TC4052BP | 4153040522 | Record equalizer control |
| IC301 | UPC1297CA | 41511297CA | HX PRO. |
| IC302,303 | TC4052BP | 4153040522 | Record bias control |
| IC403 | LB1645N | 415201645N | Motor control |
| IC601 | NJM7812FA | 415978A2FA | Regulator |
| IC602 | NJM7912FA | 415979A2FA | Regulator |
| IC603 | NJM7805FA | 41597805FA | Regulator |
| IC604 | NJM7812FA | 415978A2FA | Regulator |
| Q001-007 | 2SC2458GR | 4105224587 | Switching |
| Q013-015 | or 2SC3330T | 410523330T | Switching |
| Q101,102 | | | |
| Q105,106 | | | |
| Q113-116 | | | |
| Q201-212 | | | |
| Q304,305 | | | |
| Q407 | | | |
| Q008,010 | DTC144WS | 41092144WS | Switching |
| Q216,406 | or RN1209 | 4108912090 | Switching |
| Q217 | DTA144WS | 41091144WS | Switching |
| Q011,012 | or RN2209 | 4108922090 | Switching |
| Q103,104 | 2SA1048Y | 410501048Y | Switching |
| Q408 | or 2SA1317 | 4105013172 | Switching |
| Q107,108 | 2SK363BL | 4106503632 | Switching, FET |
| Q109,110 | 2SC2458GR | 4105224587 | Buffer |
| | or 2SC3330T | 410523330T | Buffer |
| Q214 | 2SC2458GR | 4105224587 | Regulator |
| | or 2SC3330T | 410523330T | Regulator |
| Q215 | 2SA1048Y | 410501048Y | Regulator |
| | or 2SA1317 | 4105013172 | Regulator |
| Q301,302 | 2SC1685Q | 410021685Q | Oscillator |
| Q303 | 2SD612KF | 4100306122 | Regulator |
| Q402,404 | 2SD592A-R/S | 410530592A | Switching |
| | or 2SC3377Q | 410523377Q | Switching |
| DIODES | | | |
| D001,002 | 1N4148 | 4121141480 | 1N4148 |
| D003,004 | RD8.2EB2 | 4121520825 | Zener, RD8.2EB2 |
| D005,006 | 1SS176 | 4121901760 | 1SS176 |
| D007 | 1N4148 | 4121141480 | 1N4148 |
| D101-104 | 1N4148 | 4121141480 | 1N4148 |
| D105-108 | RD3.9EB2 | 4121520395 | Zener, RD3.9EB2 |
| D201 | 1N4148 | 4121141480 | 1N4148 |
| D202 | 1SS176 | 4121901760 | 1SS176 |
| D203 | 1N4148 | 4121141480 | 1N4148 |
| D204 | 1SS176 | 4121901760 | 1SS176 |
| D301 | 1N4148 | 4121141480 | 1N4148 |
| D402,403 | 1N4002L | 4138104002 | 1N4002L |
| D408 | 1SS176 | 4121901760 | 1SS176 |
| D601-610 | 1N4002L | 4138104002 | 1N4002L |
| D611 | 1SS176 | 4121901760 | 1SS176 |
| ZD001,002 | RD4.7EB2 | 4121520475 | Zener, RD4.7EB2 |
| ZD301 | RD18EB2 | 4121521805 | Zener, RD18EB2 |
| ZD401 | RD5.6EB2 | 4121520565 | Zener, RD5.6EB2 |
| ZD402 | RD5.1EB2 | 4121520515 | Zener, RD5.1EB2 |
| ZD601 | RD9.1EB2 | 4121520915 | Zener, RD9.1EB2 |
| ZD602 | RD27EB3 | 4121532705 | Zener, RD27EB3 |
| RESISTORS | | | |
| R047,048 | 4070456164 | 4070456164 | 560 ohm, 1/4W ±2% Metal (Flame-proof) |
| R053,054 | 4070422364 | 4070422364 | 22K ohm, 1/4W ±2% Metal (Flame-proof) |
| R601 | 4070427274 | 4070427274 | 2.7K ohm, 1/4W ±1% Metal (Flame-proof) |
| R602-605 | 4070422974 | 4070422974 | 2.2 ohm, 1/4W ±1% Metal (Flame-proof) |

| Symbol No. | Ref. No. | Part No. | Description |
|---|---|---|---|
| CAPACITORS | | | |
| C009,010 | 5153220225 | 5153220225 | Ele. 22uF/25V, ±20% |
| C011,012 | 5116392550 | 5116392550 | Mylar .0039uF/50V, ±5% |
| C013,014 | 5116473550 | 5116473550 | Mylar .047uF/50V, ±5% |
| C017,018 | 5116183550 | 5116183550 | Mylar .018uF/50V, ±5% |
| C019,020 | 5116272550 | 5116272550 | Mylar .0027uF/50V, ±5% |
| C021,022 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C023,024 | 5153229250 | 5153229250 | Ele. 2.2uF/50V, ±20% |
| C025,026 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C027-030 | 5116222550 | 5116222550 | Mylar .0022uF/50V, ±5% |
| C031,032 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C033,034 | 5116392550 | 5116392550 | Mylar .0039uF/50V, ±5% |
| C035,036 | 5153478250 | 5153478250 | Ele. .47uF/50V, ±20% |
| C037,038 | 5153158250 | 5153158250 | Ele. .15uF/50V, ±20% |
| C039,040 | 5116153550 | 5116153550 | Mylar .015uF/50V, ±5% |
| C041,042 | 5153228250 | 5153228250 | Ele. .22uF/50V, ±20% |
| C043,044 | 5116683550 | 5116683550 | Mylar .068uF/50V, ±5% |
| C045,046 | 5116563550 | 5116563550 | Mylar .056uF/50V, ±5% |
| C047,048 | 5116562550 | 5116562550 | Mylar .0056uF/50V, ±5% |
| C049,050 | 5116103550 | 5116103550 | Mylar .01uF/50V, ±5% |
| C051,052 | 5153331210 | 5153331210 | Ele. 330uF/10V, ±20% |
| C053,054 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C059,060 | 5153220225 | 5153220225 | Ele. 22uF/25V, ±20% |
| C061,062 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C063 | 5153221210 | 5153221210 | Ele. 220uF/10V, ±20% |
| C064,065 | 5153479250 | 5153479250 | Ele. 4.7uF/50V, ±20% |
| C066-068 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C069 | 5105473132 | 5105473132 | SR. .047uF/25V, ±10% |
| C070,071 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C072,073 | 5153221216 | 5153221216 | Ele. 220uF/16V, ±20% |
| C078 | 5153471216 | 5153471216 | Ele. 470uF/16V, ±20% |
| C081,082 | 5116822550 | 5116822550 | Mylar .0082uF/50V, ±5% |
| C103,104 | 5153220225 | 5153220225 | Ele. 22uF/25V, ±20% |
| C105,106 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C109,110 | 5116272550 | 5116272550 | Mylar .0027uF/50V, ±5% |
| C111,112 | 5153108250 | 5153108250 | Ele. .1uF/50V, ±20% |
| C115,116 | 5163338250 | 5163338250 | Ele. .33uF/50V, ±20% (BP) |
| C117-120 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C123,124 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C125,126 | 5157109250 | 5157109250 | Ele. 1uF/50V, ±20% (LN) |
| C127-130 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C131,132 | 5116222550 | 5116222550 | Mylar .0022uF/50V, ±5% |
| C133,134 | 5116102550 | 5116102550 | Mylar .001uF/50V, ±5% |
| C135 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C136 | 5091473513 | 5091473513 | PL. .047uF/100V, ±5% |
| C137 | 5153479250 | 5153479250 | Ele. 4.7uF/50V, ±20% |
| C203,204 | 5116104550 | 5116104550 | Mylar .1uF/50V, ±5% |
| C205,206 | 5153109250 | 5153109250 | Ele. 1uF/50V, ±20% |
| C207,208 | 5091221513 | 5091221513 | PL. 220pF/100V, ±5% |
| C209,210 | 5153479250 | 5153479250 | Ele. 4.7uF/50V, ±20% |
| C211,212 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C213,214 | 5116332550 | 5116332550 | Mylar .0033uF/50V, ±5% |
| C215-218 | 5116472550 | 5116472550 | Mylar .0047uF/50V, ±5% |
| C219,220 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C221,222 | 5091473513 | 5091473513 | PL. .047uF/100V, ±5% |
| C223 | 5091103513 | 5091103513 | PL. .01uF/100V, ±5% |
| C224,225 | 5116222550 | 5116222550 | Mylar .0022uF/50V, ±5% |
| C230,231 | 5091391513 | 5091391513 | PL. 390pF/100V, ±5% |
| C301,302 | 5116103550 | 5116103550 | Mylar .01uF/50V, ±5% |
| C303,304 | 5091821513 | 5091821513 | PL. 820pF/100V, ±5% |
| C305,306 | 5116223550 | 5116223550 | Mylar .022uF/50V, ±5% |
| C307,308 | 5116393550 | 5116393550 | Mylar .039uF/50V, ±5% |
| C309,310 | 5092101513 | 5092101513 | PP. 100pF/100V, ±5% |
| C311,312 | 5091471513 | 5091471513 | PL. 470pF/100V, ±5% |
| C313,314 | 5091473513 | 5091473513 | PL. .047uF/100V, ±5% |
| C318 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C319,320 | 5091103513 | 5091103513 | PL. .01uF/100V, ±5% |
| C321 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C322 | 5153470250 | 5153470250 | Ele. 47uF/50V, ±20% |

| Symbol No. | Ref. No. | Part No. | Description |
|---|---|---|---|
| C323,324 | 5116332550 | 5116332550 | Mylar .0033uF/50V, ±5% |
| C325 | 5116153550 | 5116153550 | Mylar .015uF/50V, ±5% |
| C326 | 5091103513 | 5091103513 | PL. .01uF/100V, ±5% |
| C327 | 5092153521 | 5092153521 | PP. .015uF/200V, ±5% |
| C328 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C404 | 5154222235 | 5154222235 | Ele. 2200uF/35V, ±20% |
| C411 | 5105104142 | 5105104142 | SR. .1uF/16V, ±10% |
| C601 | 5153100250 | 5153100250 | Ele. 10uF/50V, ±20% |
| C602,603 | 5153101263 | 5153101263 | Ele. 100uF/63V, ±20% |
| C604,605 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C606 | 5154222235 | 5154222235 | Ele. 2200uF/35V, ±20% |
| C607 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C608 | 5154222235 | 5154222235 | Ele. 2200uF/35V, ±20% |
| C609 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| C610 | 5154222235 | 5154222235 | Ele. 2200uF/35V, ±20% |
| C611 | 5153101225 | 5153101225 | Ele. 100uF/25V, ±20% |
| VARIABLE RESISTORS & SWITCH | | | |
| SVR001,002 | 22KX | 5226223177 | Semi-fixed resistor |
| SVR003,004 | 20KX | 5226203177 | Semi-fixed resistor |
| SVR005,006 | 22KX | 5226223177 | Semi-fixed resistor |
| SVR007,008 | 500KX | 5226504177 | Semi-fixed resistor |
| SVR101,102 | 10KX | 5226103177 | Semi-fixed resistor |
| SVR201,202 | 5KX | 5226502177 | Semi-fixed resistor |
| SVR203-208 | 1KX | 5226102177 | Semi-fixed resistor |
| SVR301-306 | 47KX | 5226473177 | Semi-fixed resistor |
| VR301 | 5KB | 5020153281 | Variable resistor |
| SW101 | SSSF 12511A | 4410202186 | MPX switch |
| JACKS & RELAY | | | |
| JK001 | 4500800277 | 4500800277 | 2P RCA JACK RJ-1020-050 |
| JK102 | 4500800250 | 4500800250 | 4P RCA JACK |
| RL1 | OVR-SH-212L | 4390000046 | Relay |
| FILTERS & COILS | | | |
| F101,102 | 184025 | 4160614260 | MPX filter |
| F201,202 | 184014 | 4160614262 | Bias trap filter |
| L201,202 | 15mH | 4329215311 | Inductor coil |
| L301,302 | 184027 | 4360400860 | Trap(hxpro) coil |
| L303 | 1mH | 4329210211 | Motor choke coil |
| L304 | 190027 | 4330802030 | Bias oscillator coil |
| MISCELLANEOUS | | | |
| TP001,002 | EH 2P | 4490201002 | Top base |
| TP003 | EH 3P | 4490301002 | Top base |
| TP201 | EH 3P | 4490301002 | Top base |
| MP001 | EH 6P | 4490601002 | Top base |
| MP301 | EH 2P | 4490201002 | Top base |
| CN409 | B9B-EH-A | 4490901002 | Top base |
| CN410 | EH 5P | 4490501002 | Top base |
| CN411,412 | EH 2P | 4490201002 | Top base |
| CN413 | EH 8P | 4490801002 | Top base |
| CN601,602 | EH 3P | 4490301002 | Top base |
| JC601 | 3P25 | 4490300268 | Wire holder |
| JC602 | 5P25 | 4490500268 | Wire holder |
| JW101 | 5P25 | 4490500268 | Wire holder |
| **Front PCB Assembly** | | | |
| PC Board | 4141241500 | 4141241500 | PCB no components |
| | C141241500 | C141241500 | PCB assembly |
| ICS & TRANSISTORS | | | |
| IC401 | TMP87CC70F-6220 | 415387CC70 | Deck mechanism control |
| | or TMP87C70F | 415387C70F | Deck mechanism control |
| IC404 | X24C01P | 415924C01P | RAM |

| Symbol No. | Ref. No. | Part No. | Description |
|---|---|---|---|
| Q401,416 | DTA144WS | 41091144WS | Switching |
| Q418,419 | or RN2209 | 4108922090 | Switching |
| Q410,411 | DTC144WS | 41092144WS | Switching |
| Q413,415 | or RN1209 | 4108912090 | Switching |
| Q417 | | | |
| Q403,405 | 2SA1048Y | 410501048Y | Switching |
| X401 | 8.000MHz | 4100908MHZ | Crystal |
| DIODES | | | |
| D401 | 1SS176 | 4121901760 | 1SS176 |
| D404-407 | 1N4148 | 4121141480 | 1N4148 |
| ZD403 | RD7.5EB2 | 4121520755 | Zener, RD7.5EB2 |
| CAPACITORS | | | |
| C409 | 5150101210 | 5150101210 | Ele. 100uF/10V, ±20% (MINI) |
| C410 | 5153109250 | 5153109250 | Ele. 1uF/50V, ±20% |
| C416A,417A | 7306610441 | 7306610441 | Mul. .1uF/50V, +80/-20% |
| SWITCHES | | | |
| SW401 | SKHHCW054A | 4400000209 | Dolby IN/OUT SWITCH |
| SW402 | SKHHCW054A | 4400000209 | Car switch |
| SW403 | SKHHCW054A | 4400000209 | Dolby B/C switch |
| SW404 | SKHHCW054A | 4400000209 | Record switch |
| SW405 | SKHHCW054A | 4400000209 | Play switch |
| SW406 | SKHHCW054A | 4400000209 | Stop switch |
| SW407 | SKHHCW054A | 4400000209 | Fast forward switch |
| SW408 | SKHHCW054A | 4400000209 | Rewind switch |
| SW409 | SKHHCW054A | 4400000209 | Pause switch |
| SW410 | SKHHCW054A | 4400000209 | C-Reset switch |
| SW411 | SKHHCW054A | 4400000209 | Memory switch |
| MISCELLANEOUS | | | |
| CN401 | EH 4P | 4490401003 | Side base |
| CN402 | EH 3P | 4490301003 | Side base |
| CN403 | EH 4P | 4490401003 | Side base |
| E2 | FV616GK | 4110540225 | FL. display |
| **Transformer PCB Assembly** | | | |
| P C Board | 4145241620 | 4145241620 | PCB no components |
| | C145241620 | C145241620 | PCB assembly (For the AH version) |
| | C145241621 | C145241621 | PCB assembly (For the C version) |
| CAPACITORS | | | |
| C613 | 5106103141 | 5106103141 | Spark .01uF/AC400V "M" |
| FUSES | | | |
| F601,602*AH | T630mA/250V | 5266063064 | Fuse UL/CSA |
| F601,602*C | T630mA/250V | 5267063L60 | Fuse semko |
| F603,604*AH | T1.6A/250V | 5266160064 | Fuse UL/CSA |
| F603,604*C | T1.25A/250V | 5267125L60 | Fuse semko |
| MISCELLANEOUS | | | |
| JW1 | 5P25 | 4490500268 | Wire holder |
| JW2 | 3P25 | 4490300268 | Wire holder |
| WP1 | 4490400276 | 4490400276 | 4P pin header (P10) |
| E1 | PFC5000-0202T | 4692000034 | Fuse holder |

**Play Trim PCB Assembly**

| Symbol No. | Ref. No. | Part No. | Description |
|---|---|---|---|
| PC Board | 4145241630<br>C145241630 | 4145241630<br>C145241630 | PCB no components<br>PCB assembly |
| CAPACITORS | | | |
| C015,016<br>C076,077 | 5116393550<br>5116562550 | 5116393550<br>5116562550 | Mylar .039uF/50V, ±5%<br>Mylar .0056uF/50V, ±5% |
| VARIABLE RESISTOR | | | |
| VR001 | 10KCx2 | 5020214276 | Variable resistor |

**REC. Volume PCB Assembly**

| | | | |
|---|---|---|---|
| PC Board | 4145241640<br>C145241640 | 4145241640<br>C145241640 | PCB no components<br>PCB assembly |
| VARIABLE RESISTOR | | | |
| VR101 | 10KAx2 | 5020214279 | Variable resistor |
| MISCELLANEOUS | | | |
| JW3<br>JW4 | 5P25<br>3P25 | 4490500268<br>4490300268 | Wire holder<br>Wire holder |

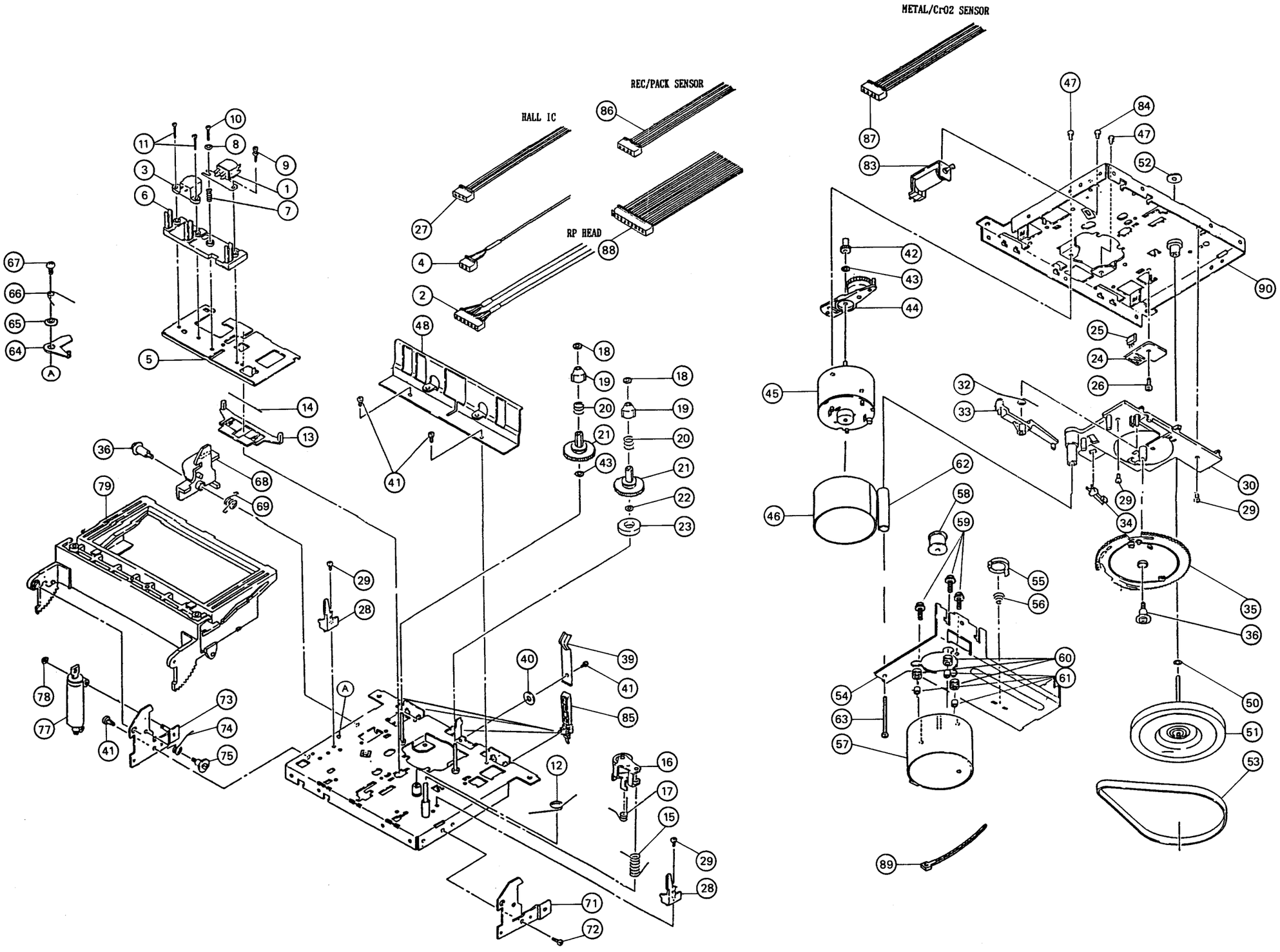
**REC. Balance PCB Assembly**

| Symbol No. | Ref. No. | Part No. | Description |
|---|---|---|---|
| PC Board | 4145241650<br>C145241650 | 4145241650<br>C145241650 | PCB no components<br>PCB assembly |
| VARIABLE RESISTOR | | | |
| VR102 | 100KW | 5020115280 | Variable resistor |
| MISCELLANEOUS | | | |
| JW5 | 3P25 | 4490300268 | Wire holder |
| P C BOARD (BLANK) KIT'S | | | |
| A1 | 4145241610 | 4145241610 | Main PCB (Blank) kit's |
| (A) | 4145241610 | 4145241610 | Main PCB (Blank) |
| (B) | 4145241630 | 4145241630 | Play trim PCB (Blank) |
| (C) | 4145241640 | 4145241640 | Record volume PCB (Blank) |
| (D) | 4145241650 | 4145241650 | Record balance PCB (Blank) |

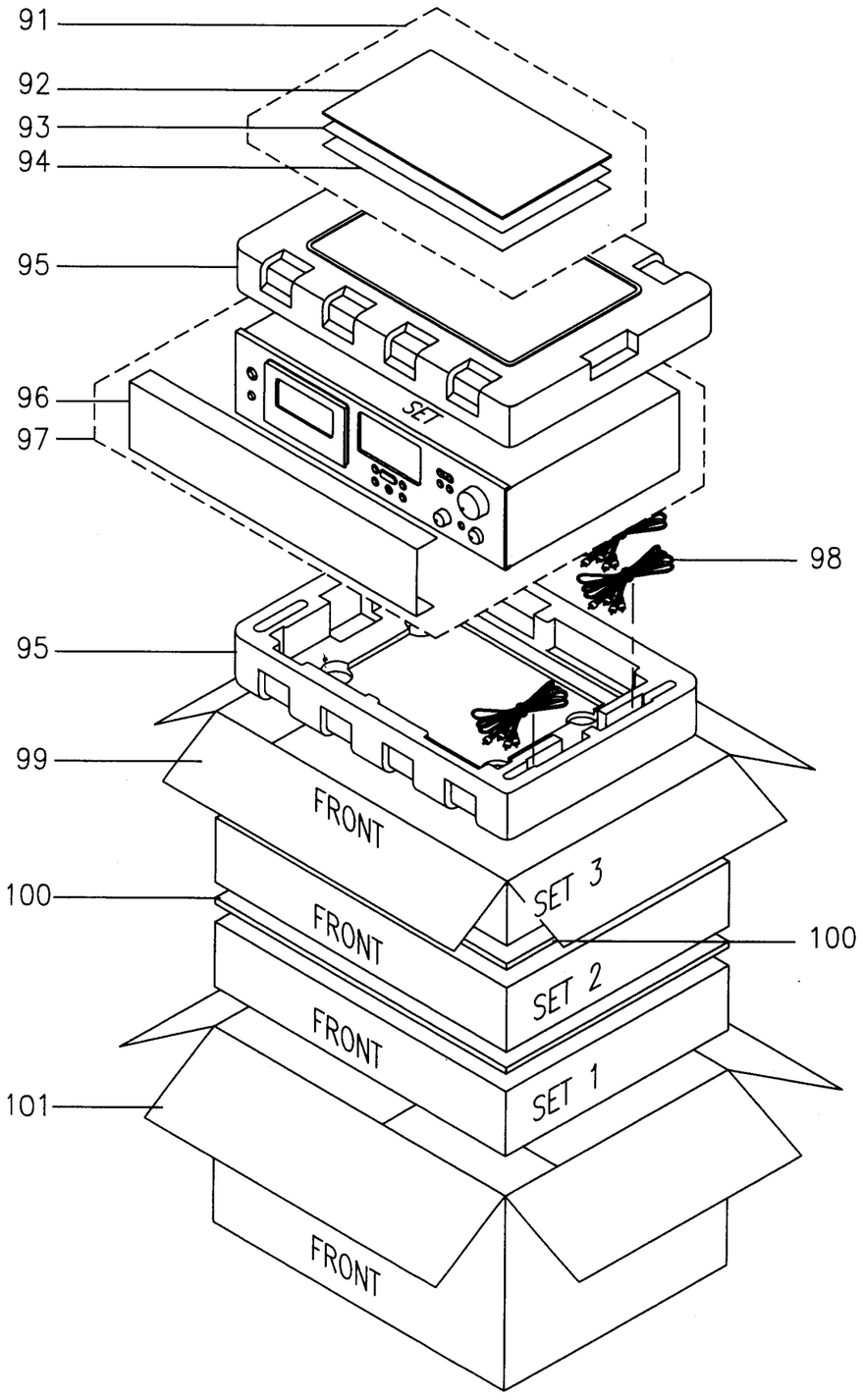
# Cassette Deck Parts List

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|---|---|---|---|---|---|
| 1 | 0000HAJCH4 | RP head HAJCH4605A | 44 | 0000A01950 | RF assembly 90A |
| 2 | 0000E09760 | Connector assembly | 45 | 0000M00640 | Motor RF510T-081200N |
| | | 25C-06F-05 | 46 | 0000Y08320 | Shield plate 30x17 |
| 3 | 0000HAJAB3 | HAJAB3125A | 47 | 0000230370 | Pan head screw 2.6x2.5 |
| 4 | 0000E09770 | Connector assembly | 48 | 0000Y09330 | Switch cover 90B |
| | | 25C-02F-04 | 50 | 0000322020 | PSW 2.1x4x0.25 |
| 5 | 0000K06460 | Head panel assembly 90A | 51 | 0000F00510 | Flywheel 90B |
| 6 | 0000U06510 | Head base 90A | 52 | 0000430170 | Nylon washer 1.9x7.0 |
| 7 | 0000Q06370 | Spring, head 9FA | 53 | 0000U05070 | Flat belt 58.5x3.5x0.4 |
| 8 | 0000301200 | Flat washer 2.2x6x0.4 | 54 | 0000Y09120 | Motor bracket |
| 9 | 0000190920 | Pan head screw 2x11 SW | 55 | 0000U03960 | Capstan support 9B |
| 10 | 0000230420 | Bind screw ±2x10 | 56 | 0000Q06210 | Spring, capstan support 8RA |
| 11 | 0000080920 | Bind screw 2x11 | 57 | 0000M00690 | Motor EG530AD-2B |
| 12 | 0000Q07740 | Spring, head panel 90A | 58 | 0000U05080 | Motor pulley 2x9.2 |
| 13 | 0000U06470 | Brake arm 90A | 59 | 0000201480 | Screw 2.6x7 w/washer |
| 14 | 0000Q07730 | Spring, brake arm 90A | 60 | 0000U00340 | Rubber cushion |
| 15 | 0000Q07770 | Spring, pinch roller assist | 61 | 0000V02910 | Coller motor cushion |
| 16 | 0000T01340 | Pinch roller assembly 90A | 62 | 0000400010 | Spacer M2.6x20 ZMC |
| 17 | 0000Q07760 | Spring, pinch roller | 63 | 0000230630 | Tapping screw 2.6x23.5 |
| 18 | 0000430160 | PSW 1.6x3.2x0.4 CUT | 64 | 0000Y09080 | Safety arm 90A |
| 19 | 0000U04990 | Hub driver 9FA | 65 | 0000W02380 | Coller, safty arm 90A |
| 20 | 0000Q07840 | Spring, back tenshion | 66 | 0000Q07810 | Spring, safty arm 90A |
| 21 | 0000U04980 | Reel plate 9FA | 67 | 0000230740 | Truss tapping screw 2.6x6 |
| 22 | 0000322050 | PSW 2.1x4x0.5 | 68 | 0000U06582 | Case lock lever 90A |
| 23 | 0000E02960 | Magnet 15x7.2x3 - 12 | 69 | 0000Q07880 | Spring, case lock lever 90B |
| 24 | 0000E02950 | PCB, IC-20 | 71 | 0000Y09100 | Case holder 90A - R |
| 25 | 0000E02650 | Hall IC (DN-6838) | 72 | 0000171470 | Tapping screw 2.6x6 |
| 26 | 0000170860 | Pan head tapping screw 2x5 | 73 | 0000K06470 | Case holder assembly |
| 27 | 0000E09780 | Connector assembly 3P | | | 90A - L |
| 28 | 0000U06480 | Cassette guide 90A | 74 | 0000Q07870 | Spring, cassette case 90B |
| 29 | 0000230700 | Bind tapping screw 2x4 | 75 | 0000230720 | Shouldec screw 2.6x5 |
| 30 | 0000U06440 | Gear base 90A | 77 | 0000A00960 | Soft damp assembly 3B |
| 32 | 0000Q07720 | Spring, trigger lever 90A | 78 | 0000430150 | PSW 2.1x4x0.4 CUT |
| 33 | 0000U06450 | Trigger lever 90A | 79 | 0000U06600 | Cassette case 90A |
| 34 | 0000S01320 | Leaf switch LSA-1119R | 83 | 0000P01030 | Solenoid assembly |
| 35 | 0000UV0004 | Drive gear 90C | 84 | 0000190850 | Pan head screw 2x4 w/washer |
| 36 | 0000230620 | Shouldec screw 2.6x9 | 85 | 0000S01280 | Switch LSA1132FAU |
| 39 | 0000Y09010 | Spring plate 90A | 86 | 0000E09800 | Connector assembly 4P |
| 40 | 0000301260 | Flat washer 2.8x7.5x0.5 | 87 | 0000EV0080 | Connector assembly 4P |
| 41 | 0000171450 | Tapping screw 2.6x4 | 88 | 0000E09790 | Connector assembly 9P |
| 42 | 0000U06670 | RF pulley gear 90A | 90 | 0000K06450 | Chassis assembly |
| 43 | 0000322050 | Polyslider washer | | | |

# Cassette Deck Exploded View



## Packing Diagram




## Packing Parts List

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|---|---|---|---|---|---|
| 91 | 9902304041 | Poly bag 23x40 (1/B) | 96 | 9004038401 | Soft sheet |
| 92 | 9080021810 | Instruction book (7L) | 97 | 9906006041 | Poly bag 60x60 (SET) |
| 93 | 9120004890 | Safety sheet | 98 | 5620100051 | Patch cord BLK-1M (3 pieces) |
| | | (for the AH version) | 99 | 900207D614 | Gift box |
| 94 | 9030005890 | Warranty card | 100 | 900507D614 | Carton sheet (2 pieces/3set) |
| | | (for the AH version) | 101 | 900107D614 | Master carton (3set/carton) |
| 95 | 900607D614 | Snow box (2 pieces) | | | |